

What we claim is:

1. An organ or biological tissue preservation aqueous machine perfusion solution comprising:
 - a prostaglandin having vasodilatory, membrane stabilizing, platelet aggregation prevention upon reperfusion, and complement activation inhibitory properties;
 - a nitric oxide donor; and
 - a glutathione-forming agent.
2. The machine perfusion solution of claim 1 wherein the prostaglandin comprises prostaglandin E1.
3. The machine perfusion solution of claim 1 wherein the prostaglandin has cellular and organelle membrane stabilization properties and cytoprotective properties.
4. The machine perfusion solution of claim 1 wherein the nitric oxide donor comprises nitroglycerin.
5. The machine perfusion solution of claim 1 wherein the glutathione-forming agent comprises N-acetylcysteine.
6. The machine perfusion solution of claim 1 further comprising KH_2PO_4 , sodium gluconate, magnesium gluconate, adenine, and ribose.
7. The machine perfusion solution of claim 1 further comprising CaCl_2 , HEPES, glucose, mannitol and pentastarch.
8. The machine perfusion solution of claim 1 further comprising NaCl and KOH.
9. The machine perfusion solution of claim 1 wherein the prostaglandin comprises about 100-10,000mcg/L prostaglandin E1, the nitric oxide donor comprises about 1-15mg/L nitroglycerin, and the glutathione-forming agent comprises about 0.1-5mg/L N-acetylcysteine, further comprising:
 - about 40-160mM sodium gluconate;
 - about 10-50mM KH_2PO_4 ;
 - about 1-15mM magnesium gluconate;

about 1-15mM adenine;
about 1-15mM ribose;
about 0.1-2mM CaCl_2 ;
1-30mM HEPES;
about 1-30mM glucose;
about 10-100mM mannitol; and
about 40-60g/L pentastarch.

10. The machine perfusion solution of claim 1 wherein the prostaglandin comprises about 250-2,500mcg/L prostaglandin E1, the nitric oxide donor comprises about 3-8mg/L nitroglycerin, and the glutathione-forming agent comprises about 0.5-2mg/L N-acetylcysteine, further comprising:

about 60-100mM sodium gluconate;
about 20-30mM KH_2PO_4 ;
about 3-8mM magnesium gluconate;
about 3-8mM adenine;
about 3-8mM ribose;
about 0.3-0.8mM CaCl_2 ;
about 8-15mM HEPES;
about 8-15mM glucose;
about 15-50mM mannitol; and
about 45-55g/L pentastarch.

11. The machine perfusion solution of claim 1 wherein the prostaglandin comprises about 500mcg/L prostaglandin E1, the nitric oxide donor comprises about 5mg/L nitroglycerin, and the glutathione-forming agent comprises 1mg/L N-acetylcysteine, further comprising:

about 80mM sodium gluconate;
about 25mM KH_2PO_4 ;
about 5mM magnesium gluconate;

about 5mM adenine;
about 5mM ribose;
about 0.5mM CaCl₂;
about 10mM HEPES;
about 10mM glucose;
about 30mM mannitol; and
about 50g/L pentastarch.

12. The machine perfusion solution of claim 1 further comprising at least one of distilled water and deionized water.
13. A preserved organ or biological tissue comprising at least one of a cadaveric organ and tissue within the machine perfusion solution of claim 1 in at least one of a deep hypothermic condition and physiological condition.
14. The preserved organ or biological tissue of claim 13 wherein the machine perfusion solution is infused through vasculature of at least one of a cadaveric organ, living donor organ, and tissue.
15. The preserved organ or biological tissue of claim 13 wherein the machine perfusion solution is infused over or through a vascular biological substance to maintain viability of at least one of the cadaveric organ and tissue during an ex vivo period.
16. The preserved organ or biological tissue of claim 13 wherein the deep hypothermic condition comprises a temperature of about 2-10°C.
17. The preserved organ or biological tissue of claim 13 wherein the physiological condition comprises a temperature of about 37°C.
18. A perfusion machine comprising:
a chamber that mimics at least one of a deep hypothermic environment and physiological environment; and
the machine perfusion solution of claim 1 that continuously circulates through the chamber.